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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/811,898	03/19/2001	Takanobu Yoshino	09792909-4811	7628

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EXAMINER	
YUAN, DAH WEI D	
ART UNIT	PAPER NUMBER
1745	5

DATE MAILED: 01/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/811,898	YOSHINO ET AL.	
	Examiner	Art Unit	
	Dah-Wei D. Yuan	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 12-17* is/are rejected.

7)☒ Claim(s) *5-11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

METHOD OF MANUFACTURING A BATTERY

Examiner: Yuan S.N. 09/811,898 Art Unit: 1745 December 28, 2002

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,2 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyazaki et al. (US 6,162,264).

With respect to claim 1, Miyazaki et al. teach a method of manufacturing a battery comprising a positive electrode (37, $LiCoO_2$), a negative electrode (38, a carbonaceous material) and a separator (39, electrolyte layer) arranged between the positive electrode and the negative electrode. Figure 8 shows an electrode plate in which terminals (7) are attached to the non-coated portions in the current collector (1). The contact region between the terminal and the electrode plate is excluded of any electrolyte layer (see Figure 22). With respect to claim 2, Figure 23 is a 2-D view of an original sheet for a plurality of electrode that active electrode

mixtures (2) are formed intermittently on a current collector. The collector is then subjected to cutting as indicted in Figure 7(A). See Column 1, Lines 35-54; Column 2, Lines 35-50.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3,12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al. (US 6,162,264) as applied to claims 1,2 above in view of Akahira (US 6,387,562).

Miyazaki et al. teach a method of manufacturing a battery as described in Paragraph 3 above. However, Miyazaki et al. teach neither a step of disposing a protection tape on the terminal after the terminal is attached to the current collector nor the use of gel-type electrolyte. Akahira teaches a method to manufacture a non-aqueous electrolyte cell. The method includes a step to cover a portion of the terminal with a laminated film (2) and, subsequently, the rim portion of the resulting assembly is heat-fused for hermetic sealing. See Figure 2; Column 4, Lines 24-33. Therefore, it would have been obvious to one of ordinary skill in the art to cover a portion of the terminal after the terminal is attached to the exposed current collector in battery of Miyazaki et al., because Akahira et al. teach the use of a laminated film on the bare current collect to achieve hermetic sealing in the battery assembly.

With respect to claims 12-17, Miyazaki et al. do not teach the use of an electrolyte comprising electrolyte salts and macromolecular compounds. Akahira teaches the active electrode layer is partially removed to expose the current collect and the terminal lead can be mounted on the exposed portion. Consequently, a gel-like electrolyte is coated on the entire surface thereof to prevent shorting otherwise caused by the current collector being exposed to outside. The gel-like electrolyte can be a wide variety of high molecular material including polyvinylidene fluoride. The lithium salts used in the gel-like electrolyte include $LiAsF_6$ and $LiCF_3SO_3$. Solvents used include ethylene carbonate and propylene carbonate. Carbon materials, including pryocarbon, cokes and graphite, can be used as the negative electrode material while $LiCoO_2$ and $LiNiO_2$ can be used as the positive electrode material. See Column 4, Lines 24-33, 64 to Column 5, Line 15; Column 6, Lines 31-58; Column 7, Lines 1-36; Column 8, Lines 8-20. Therefore, it would have been obvious to one of ordinary skill in the art to use the gel-like electrolyte in the battery of Miyazaki et al., because Akahira et al. teach the use of such electrolyte to prevent shorting in the resulting battery.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al. (US 6,162,264) as applied to claims 1,2 above in view of Kaido et al. (US 6,314,638).

Miyazaki et al. teach a method of manufacturing a battery as described in Paragraph 3 above. However, Miyazaki et al. do not teach the active electrode materials are formed on both sides of the current collector in the battery assembly. Kaido et al. teach a method to form active electrode material intermittently over the surface of the current collector as shown in Figure 8.

Moreover, the electrode material is coated sequentially or simultaneously to front and back surfaces of the current collector so that uncoated areas at predetermined intervals in the longitudinal direction are obtained. See Column 34, Line 66 to Column 35, Line 5. Therefore, it would have been obvious to one of ordinary skill in the art to coat both surfaces of the electrode collector with active electrode material on the battery of Miyazaki et al., because Kaido et al. teach the active electrode material can be coated on both faces of the current collector sequentially in order to improve the efficiency and performance of the resulting electrochemical cell.

Allowable Subject Matter

7. Claims 5-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 5-11 would be allowable because the prior art does not disclose or suggest the formation of the electrolyte layer by using an electrolyte delivering machine having a pressurization means.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (703) 308-0766. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (703) 308-2383. The fax phone numbers for

the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Dah-Wei D. Yuan
December 28, 2002

Patrick Ryan
Supervisory Patent Examiner
Technology Center 1700